

ASSIGNMENT 3

Textbook Assignment: "Offhand Grinding of Tools and Selection of Carbide Tooling," chapter 5, and "Engine Lathes," chapter 6, pages 6-1 through 6-18.

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| <p>3-1. The number A100D15V identifies which of the following characteristics?</p> <ol style="list-style-type: none">1. Coarse grit and dense structure2. Fine grit and open structure3. Hard bond and aluminum oxide abrasive4. Soft bond and silicon carbide abrasive <p>3-2. What abrasive should be used to grind steel and steel alloys?</p> <ol style="list-style-type: none">1. Silicon carbide2. Corundum3. Diamond4. Aluminum oxide <p>3-3. Normally, a grinding wheel installed on a bench grinder should NOT exceed what thickness?</p> <ol style="list-style-type: none">1. 1 in.2. 7/8 in.3. 1/2 in.4. 1/4 in. <p>3-4. A hard grade grinding wheel has which of the following qualities?</p> <ol style="list-style-type: none">1. A large number of strong abrasive grains2. A small amount of bond surrounding the abrasive grains3. Thick bond posts and great resistance to grinding pressure4. Thin bond posts offering greater resistance to grinding pressure <p>3-5. What station in the standard marking system indicates the strength of a grinding wheel?</p> <ol style="list-style-type: none">1. Bond type2. Bond grade3. Grain size4. Structure | <p>3-6. A diamond grinding wheel marked D100C50B 1/8" has which of the following characteristics?</p> <ol style="list-style-type: none">1. It is 1/8 inch wide2. It contains manufactured abrasive3. Its bond is not modified4. It has a grit size of 50 <p>3-7. You should use what type of grinding wheel to grind high-speed steel?</p> <ol style="list-style-type: none">1. Silicon carbide2. Diamond3. Corundum4. Aluminum oxide <p>3-8. A grinding wheel gives off a dull thud when tapped with a piece of hard wood. What problem is indicated?</p> <ol style="list-style-type: none">1. Out of roundness2. Warping3. Invisible cracks4. Excessive moisture <p>3-9. The use of a coolant allows you to use what grade of grinding wheel?</p> <ol style="list-style-type: none">1. Softer2. Harder3. Thicker4. Open <p>3-10. Thin cutoff wheels should be stored without any separators or blotters between them.</p> <ol style="list-style-type: none">1. True2. False |
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- 3-11. When finish grinding a carbide tool bit, you should use which of the following grinding wheels?
1. Silicon carbide
 2. Diamond impregnated
 3. Aluminum oxide
 4. Emery
- 3-12. You are grinding a carbide tool bit on a carbide grinder. Irregular coolant flow will cause what problem with the tool bit?
1. Cratering
 2. Edge wear
 3. Cracking
 4. Softening
- 3-13. When installing a grinding wheel on a spindle, you should use flanges and cardboard or rubber washers for what purpose?
1. To remove play of the wheel on the spindle
 2. To distribute even pressure and dampen vibration
 3. To hold the wheel on the spindle
 4. To grip the wheel so it can rotate with the spindle
- 3-14. Leaving part of a grinding wheel soaking in coolant will cause what problem?
1. Imbalance
 2. Out-of-roundness
 3. A grooved grinding surface
 4. Cracks
- 3-15. A high-speed tool bit is most effective on interrupted cuts when it contains what element?
1. Tungsten
 2. Vanadium
 3. Chromium
 4. Molybdenum
- 3-16. A chip breaker grinder uses what type of grinding wheel?
1. Silicon carbide
 2. Aluminum oxide
 3. Emery
 4. Diamond
- 3-17. What process is used to manufacture cemented carbide cutting tools?
1. Welding
 2. Compressing powders and sintering
 3. Electrolyzing
 4. Thermal spraying
- 3-18. A 50 percent increase in cutting speed will decrease a carbide tool bit's life by what percent?
1. 65
 2. 70
 3. 80
 4. 90
- 3-19. What material is most widely used for cutting tools used in the machining industry?
1. Cemented carbide
 2. High-speed steel
 3. Ceramic
 4. Diamond
- 3-20. Carbide insert breakdown is most frequently caused by what problem(s)?
1. Edge wear and cratering
 2. Too slow a speed
 3. Too much feed
 4. Lack of rigidity
- 3-21. When the radii on your carbide insert is too large, it can cause what problem?
1. Chipping
 2. Edge wear
 3. Chatter
 4. Cratering
- 3-22. What shape of carbide insert is the strongest?
1. Square
 2. Round
 3. Hexagonal
 4. Triangular

- 3-23. To help them resist cratering and edge breakdown, some carbide inserts are given a coating of what type of carbide?
1. Cobalt
 2. Titanium
 3. Tantalum
 4. Tungsten
- 3-24. If the cutting edge of your carbide insert is chipped or broken, you should take which of the following actions?
1. Increase the speed
 2. Change to a positive rake insert
 3. Change to a softer grade insert
 4. Increase the feed
- 3-25. You are machining carbon steel and you start to get buildup on your insert. You should switch to what type of insert?
1. Negative rake
 2. Round
 3. Square
 4. Positive rake
- 3-26. A ceramic cutting tool can machine metals that are too hard for carbide tools.
1. True
 2. False
- 3-27. The cutting edges of a carbide insert should be what length?
1. 2 times the length of the toolholder
 2. $1/2$ the length of the cutting edge engagement
 3. $1/10$ the size of work
 4. $1 \frac{1}{2}$ times the length of the cutting edge engagement
- 3-28. When machining with a ceramic cutting tool, you should NEVER take what type of cut?
1. Light
 2. Continuous
 3. Fast
 4. Interrupted
- 3-29. The diamond wheel on a chip breaker grinder may also be used to grind what type of cutting tool?
1. High-speed
 2. Cobalt
 3. Carbide
 4. Ceramic
- 3-30. Which of the following lathe tools should be used to machine a groove?
1. Cutoff
 2. Threading
 3. Turning
 4. Facing
- 3-31. A left-hand or right-hand facing tool has a sharp point for what purpose?
1. To cut inside threads
 2. To cut outside threads
 3. To machine square corners
 4. To machine necks
- 3-32. A round-nosed turning tool that is ground flat on top is usually fed in what direction?
1. Right to left
 2. Left to right
 3. Either 1 or 2 above
 4. Away from the lathe center

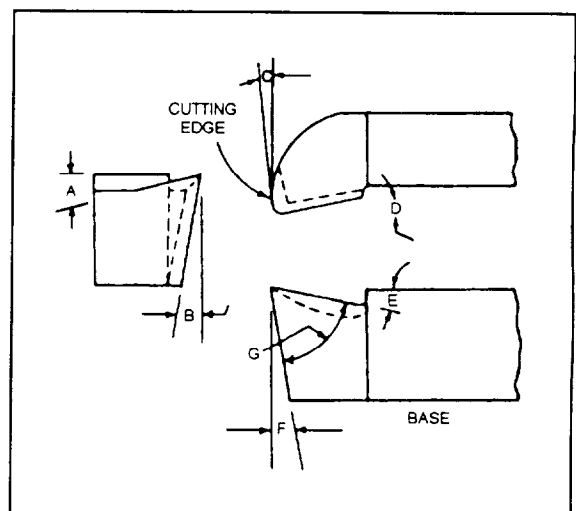


Figure 3A

IN ANSWERING QUESTIONS 3-33 THROUGH 3-35,
REFER TO FIGURE 3A.

3-33. Which angle is the side rake angle?

1. A
2. B
3. C
4. D

3-34. Which angle is the end relief angle?

1. A
2. B
3. F
4. G

3-35. Which angle is the back rake angle?

1. D
2. E
3. F
4. G

3-36. When you are using a quick change tool post and toolholder instead of a standard toolholder, which of the following angles will change?

1. Nose
2. Side rake
3. Side cutting edge
4. End relief

3-37. When grinding a lathe tool bit, you should perform what step last?

1. Grind the top
2. Hone the cutting edges
3. Grind the radius
4. Measure the width

3-38. What angle is less on a shaper tool bit than on a lathe tool bit?

1. Relief
2. Nose
3. Top
4. Back

3-39. The included angle of a center punch should be ground to what angle?

1. 30°
2. 45°
3. 60°
4. 90°

3-40. The cutting edge of a general-use metal-cutting chisel is ground to a 60° included angle. To cut harder material, what change should be made to the cutting edge?

1. Heat treat it
2. Increase its angle
3. Lubricate it
4. Decrease its angle

3-41. The cutting lip angle of a twist drill is normally checked with what gauge?

1. Cutter clearance
2. Center
3. Drill-point
4. Vernier height

3-42. Too little or no lip clearance on a twist drill will cause the drill to

1. dig in
2. drill too fast
3. chatter
4. fail to drill

3-43. The point of a general purpose twist drill is ground to what included angle?

1. 45°
2. 59°
3. 90°
4. 118°

3-44. You are drilling brass with a twist drill and it has a tendency to be sucked into the brass. What part of the drill can you grind slightly flat to correct this problem?

1. The web
2. The point
3. The flute
4. The shank

- 3-45. The swing of a 16-inch by 8-foot lathe is 8 feet.
1. True
 2. False
- 3-46. What are the shapes of the ways of a typical lathe?
1. Square or curved
 2. Curved or V-shaped
 3. V-shaped or flat
 4. Flat or square
- 3-47. Power is applied to the workpiece on a lathe through what part of the lathe?
1. The tailstock spindle
 2. The headstock spindle
 3. The crossfeed screw
 4. The dead center
- 3-48. A lathe headstock spindle has a hole running through its center for what purpose?
1. To permit bars or rods to pass through the spindle
 2. To improve the cooling of the gearbox
 3. To permit thorough lubrication of the spindle bearings
 4. To dissipate heat from the cutting tool
- 3-49. The distance between centers on an engine lathe may be adjusted by moving what part (s)?
1. The headstock only
 2. The tailstock only
 3. The tailstock and headstock
 4. The carriage
- 3-50. Rotation of the tailstock handwheel on an engine lathe results in movement of what part of the tailstock?
1. The base
 2. The spindle-adjusting screw
 3. The top
 4. The clamp bolt
- 3-51. When an engine lathe is used for milling, the workpiece is mounted on what part of the lathe?
1. The headstock
 2. The tailstock spindle
 3. The carriage
 4. The faceplate
- 3-52. On an engine lathe, the carriage is usually locked in position to perform which of the following operations?
1. Turning
 2. Facing
 3. Boring
 4. Drilling
- 3-53. The apron is driven by what part of the lathe?
1. The feed rod
 2. The change gear
 3. The spindle
 4. The back gear
- 3-54. What part of an engine lathe is attached directly to the crossfeed slide of the carriage?
1. The cutting tool
 2. The workpiece
 3. The tool post
 4. The compound rest
- 3-55. The half-nut in the apron is engaged with the lead screw when an engine lathe is used for what purpose?
1. Turning
 2. Facing
 3. Boring
 4. Threading
- 3-56. Each gear in a quick-change gear box cluster has what unique difference?
1. Bore size
 2. Thickness
 3. Gear ratio
 4. Color

- 3-57. A lathe you are working on is equipped with a quick-change gear box and a sliding compound gear. One lever on the gearbox has three possible positions while the other lever has six positions. How many screw speeds are available?
1. 6
 2. 18
 3. 3
 4. 36
- 3-58. Feeds on the quick-change gear box are identified in terms of ten thousandths of an inch per
1. second
 2. minute
 3. spindle revolution
 4. feed rod revolution
- 3-59. What method is used to cut the seating area of a globe valve disk?
1. Tail stock setover
 2. Compound rest
 3. Taper attachment
 4. Forming tool
- 3-60. The tool post is used only to provide rigid support for the toolholder.
1. True
 2. False
- 3-61. What type of work is done on a lathe with the help of a knurling tool attachment?
1. Trimming an oversize metal workpiece
 2. Roughing the surface of a round metal workpiece
 3. Threading the outside of a solid metal workpiece
 4. Threading the inside of a solid metal workpiece
- 3-62. What type of toolholder is most widely used?
1. Boring bar
 2. Standard
 3. Insert
 4. Quick-change
- 3-63. Workpieces that have irregular cross sections are held in what type of lathe chuck?
1. Scroll
 2. 4-jaw
 3. Standard collet
 4. Hexagonal collet
- 3-64. For precision turning of small work, what type of lathe chuck is preferred?
1. Combination
 2. Universal
 3. Independent
 4. Draw-in collet
- 3-65. To automatically center round workpieces of many sizes, what type of lathe chuck is preferred?
1. Scroll
 2. 4-jaw
 3. Standard collet
 4. Hexagonal collet
- 3-66. Draw-in collet chuck collets are manufactured in what increments?
1. 1/64 in.
 2. 1/32 in.
 3. 1/16 in.
 4. 1/8 in.
- 3-67. What is the main difference between a tailstock center and a headstock center?
1. Shank taper
 2. Point taper
 3. Metal hardness
 4. Diameter
- 3-68. The point of a Morse taper center is ground to what included angle?
1. 30°
 2. 45°
 3. 60°
 4. 75°

- 3-69. A lathe drive plate is primarily used for what purpose?
1. To drill holes
 2. To drive work
 3. To cut keyways
 4. To drive the thread rod
- 3-70. A follower rest is used on a lathe to prevent what problem?
1. Springing of the work
 2. Improper centering of the work
 3. Irregular feed pressure in thread cutting
 4. Out-of-round turning of the work
- 3-71. You should use a center rest for support on which of the following lathe jobs?
1. Long workpieces
 2. Workpieces being machined to a noncircular cross section
 3. Hexagonal workpieces
 4. Workpieces that have no indented centers
- 3-72. A hardened tailstock center for an engine lathe is identified by what mark?
1. A longitudinal cut
 2. A dimple
 3. A circular groove
 4. A punched depression
- 3-73. A portable grinding machine attaches to what part of a lathe?
1. The cross slide
 2. The apron
 3. The ways
 4. The compound rest
- 3-74. A carriage stop may be used on an engine lathe to remove the need for what operation?
1. Manual operation at the end of a cut
 2. Repeated measurements of the same dimension
 3. Setup measurements made directly on the workpiece
 4. Variable rates of feed across a workpiece
- 3-75. The dial of a thread dial indicator is geared to what part of a lathe?
1. The feed rod
 2. The lead screw
 3. The tailstock screw
 4. The compound rest screw